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10/034,459	12/28/2001	Huan-Cheng Chang	08919-075001 /07A-900806	9342
26161	7590	11/13/2003	EXAMINER	
FISH & RICHARDSON PC 225 FRANKLIN ST BOSTON, MA 02110			FERNANDEZ, KALIMAH	
			ART UNIT	PAPER NUMBER
			2881	

DATE MAILED: 11/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/034,459

Applicant(s)

CHANG ET AL.

Examiner

Kalimah Fernandez

Art Unit

2881

Cyw

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-24 and 27-29 is/are pending in the application.
- 4a) Of the above claim(s) 25 and 26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4-13, 15-18, 21-24 and 27-29 is/are rejected.
- 7) ☒ Claim(s) 3, 14, 19 and 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Election/Restrictions***

1. Claims 25-26 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper received on 7-15-2003.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2,6,8-12 and 15-18 are rejected under 35 U.S.C. 102(b) as being anticipated by US Pat No 5,300,772 issued to Buttrill, Jr.
3. As per claims 1 and 10, Buttrill discloses a first end-cap electrode (2), a second end-cap electrode (2'), and a ring electrode (1) (col.4, lines 59-65).

4. Buttrill discloses the application of an audio frequency voltage between the ring electrode (1) and the first end-cap electrode (2) and second end-cap electrode (2') at first amplitude and to eject when increases to second amplitude (col. 7, lines 36-41).
5. As per claims 2 and 18, Buttrill discloses the first end-cap electrode includes an ion entrance, the second end-cap electrode includes an ion ejection aperture, and the ring electrode includes an observation aperture (see fig.1).
6. As per claims 6, 12 and 16-17, Buttrill discloses the audio frequency voltage is in a frequency range between about 50 and 2000 hertz (col.7, lines 36-68).
7. As per claims 8-9, Buttrill discloses a voltage range 0 to 6500 volts, wherein the recited 400 volts falls within (see col.4, lines 56-59).
8. As per claim 11, Buttrill discloses measuring a secular frequency of the motion of the charged particle inside the confinement region (col.7, line 61-col.8, line 5).
9. As per claim 15, Buttrill discloses a mass spectrometer having an ion source (3), a trap (10), and a detection module (4) (col.4, line 66-col.5, line 20).

10. As per claim 23-24, Buttrill discloses the recited calculation (col.5, lines 35-50).

11. Claims 1-2,10, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by US Pat No 5,696,376 issued to Doroshenko et al.

12. Doroshenko et al disclose an ion trap having a first end-cap electrode (20), second end-cap electrode (22), and a ring electrode (15) (col.10, lines 9-11).

13. Doroshenko et al disclose the application of radio frequency voltage having first amplitude to trap/confine a first and second group of ions (col.5, lines 42-58).

14. Doroshenko et al disclose changing the voltage to second amplitude in order to eject ions belonging to the second ion group (col.5, lines 58-63).

15. As per claim 2, Doroshenko et al disclose the first end-cap electrode (20) includes an ion entrance aperture (46) (col.10, lines 36-41), the second end-cap electrode includes an ion ejection aperture (s) (60) (col.11, lines 14-16), and the ring electrode includes an observation aperture (52) (col.10, lines 49-52).

16. As per claim 10, Doroshenko et al disclose introducing a charged particle into such ion trap including a first and second end-cap electrodes (20,22) and a ring electrode (15) (col.10, lines 9-11).
17. Doroshenko et al disclose applying a trapping audio frequency voltage (col.5, lines 42-58).
18. Doroshenko et al disclose increasing the amplitude of the audio frequency voltage to second amplitude to eject the charged particle from the ion trap (col.5, lines 58-63).
19. As per claim 15, Doroshenko et al disclose detection module (14) (see fig.4).

***Claim Rejections - 35 USC § 103***

20. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

21. Claims 4-5 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doroshenko et al ('376) and in view of US Pat No 5,736,741 issued to Bertsch et al.

22. Doroshenko et al teaches the claimed invention except does not explicitly teach a needle, capillary, and differential pumping region.

23. Rather Doroshenko et al teaches the use of an ESI source (see col.10, lines 22-28), which generally employs such a needle, capillary, and differential pumping as illustrated in Bertsch (see col.4, lines 5-17; col.5, lines 53-57).

24. It would have been obvious to a skilled artisan to incorporate the teachings of Bertsch et al into Doroshenko et al since Bertsch et al teaches the advantage of replacing the capillary with reduced downtime (col.2, lines 11-64).

25. As per claims 5 and 21, Bertsch et al teaches the capillary and pumping regions connected to ground and the needle is connected to a DC voltage (col.6, lines 18-26).

26. Claims 7, 13, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doroshenko et al and in view of US Pat No 5,770,857 issued to Fuerstenau et al.

27. Doroshenko et al teaches the claimed invention except for the recited mass range.

28. However, the recited mass ranges are common in mass spectrometry and thereby constitute a result-effective variable, which achieves an art-recognized result. Fuerstenau et al is relied upon to illustrate the use of mass range in mass spectrometry (col.1, lines 23-59).

29. It would have been obvious to an ordinary artisan to employ the recited mass range since Fuerstenau et al teaches the generally available knowledge in the art to use 1.3 Mda (col.1, lines 55-59).

30. Claims 23-24 and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doroshenko et al.

31. Doroshenko et al disclose the use of a calibration in calculation of the mass to charge ratio (see col.13, lines 44-49). Doroshenko et al does not explicitly teach the recited equation however the recited equation can be easily derived from Doroshenko et al.

***Allowable Subject Matter***

32. Claims 3,14, and 19-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable



subject matter: the prior art of record fails to teach or obviously suggest the claimed invention.

33. Specifically, no teaching or obvious suggestion was found of the limitation "a light detection module that detects light scattered from the charged particle after it is ejected from the ion trap" as recited in claims 3 and 19-20. Similarly, no teaching or obvious suggestion was found of the method of detecting scattered light from ejected particles as in claim 14.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Pat No 5,457,315 issued to Wells et al; US Pat No 5,783,824 issued to Baba et al; and US Pat No 6,452,168 issued to McLuckey et al are considered relevant to the claimed invention. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kalimah Fernandez whose telephone number is 703-305-6310. The examiner can normally be reached on Mon-Thurs between 7:00am- 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R Lee can be reached on 703-308-4116. The

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fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

kf

  
SUPERVISOR  
TECHNICAL STAFF